ORAL HISTORY OF THE TENNESSEE VALLEY AUTHORITY
INTERVIEW WITH
ALBERT S. FRY

BY - CHARLES W. CRAWFORD
ORAL HISTORY RESEARCH OFFICE
MEMPHIS STATE UNIVERSITY

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INTERVIEW WITH ALBERT S. FRY

OCTOBER 17, 1969

BY CHARLES W. CRAWFORD

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PLACE Knoxville, Tenn.

DATE Oct. 17, 1969

Albert S. Fry
(Interviewee) Albert S. Fry

Charles W. Crawford
(For the Mississippi Valley Archives
of the John Willard Brister Library
of Memphis State University)

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THIS IS MEMPHIS STATE UNIVERSITY ORAL HISTORY RESEARCH OFFICE PROJECT AN ORAL HISTORY OF THE TENNESSEE VALLEY AUTHORITY. THE DATE IS OCTOBER 17, 1969. THE INTERVIEW IS WITH MR. ALBERT S. FRY OF KNOXVILLE, TENNESSEE. THE INTERVIEWER IS DR. CHARLES W. CRAWFORD OF MEMPHIS STATE UNIVERSITY.

DR. CRAWFORD: Mr. Fry, I suggest that we start the interview with some background information about your early life, your education, and your career before going to work for the Tennessee Valley Authority, if you care to give that in some sort of chronological order or whatever occurs to you.

MR. FRY: All right, I was educated at the University of Illinois, graduated in 1913, and received a professional degree of civil engineering from there in 1918. Shortly after graduation I went to work for the Morgan Engineering Company in Memphis. I worked for the Morgan Engineering Company for a period of 18 years, until 1931 when the Depression hit. Then I went to work with the

MR. FRY: (Cont'd.) Corps of Engineers and worked for them one year at Memphis and one year at Cairo, Illinois. The TVA was then started in 1933, and Mr. Carl Bach, who was then Assistant Chief Engineer of TVA, whom I had known in the Morgan Engineering Company, called me and made me an offer to come to work for the TVA in Knoxville. So I came over here in October, 1933, and spent the rest of my years here until I retired from TVA in June, 1961.

Since that time I have been a consulting hydraulic engineer and have figured out various assignments in that category.

I am probably the oldest acquaintance that you will interview of Dr. Morgan, since I went to work for him in June, 1913.

DR. CRAWFORD: Let me get a few other details in this background, if we can, Mr. Fry. Where were you born and where did you live before you went to college?

MR. FRY: I was born in LeClaire, Iowa, near Davenport, Iowa, March 13, 1892. I lived there until I was about ten years old and then moved to Urbana, Illinois

MR. FRY: (Cont'd.) which is the site of the University of Illinois. I had my pre-college education there in the public schools of Urbana and then started to the University in 1909.

DR. CRAWFORD: All right, why did you decide to go into engineering?

MR. FRY: I decided to go into engineering one day while I was working during the summer following my high school graduation. I had two choices that I was interested in. One was engineering and the other was journalism. If you know anything about plowing corn in Illinois, you know that you've got a lot of time to think. (laughter) In those days you didn't run a tractor, you used two horses. So I decided then that I liked engineering because I would get a chance to travel some, and I thought perhaps that I could combine the journalism with engineering, and to some extent I have done that.

Immediately after I left school I went to work with the Alabama Power Company for a month in Alabama, and I also worked with the Oilbelt Railroad Company in Southern Illinois. Then I got an offer from the Morgan Engineering Company

MR. FRY: (Cont'd.) in Memphis, and went to work for them and I have previously stated.

DR. CRAWFORD: What sort of work did you do for the engineering company, Mr. Fry?

MR. FRY: For the Morgan Engineering Company?

DR. CRAWFORD: Yes.

MR. FRY: The Morgan Engineering Company was engaged in a large project of drainage and flood control development. At that time the lands near Memphis and Arkansas were largely swampland, and there was much swampland in Northern Mississippi and other areas in the South. It looked like a good field. Mr. Morgan and his partner, Mr. Hidinger, had come to Memphis to set up the Morgan Engineering Company and undertook to carry out that kind of work. I was engaged on hydraulic engineering with them on a number of projects which involved the mapping of large areas in the South and designing flood control and drainage canals and other hydraulic work on projects in the Mid-South. Part of the work of the Morgan Engineering Company at that time. . .

MR. FRY: (Cont'd.) Let me go back just a little. At that time the federal government did not contribute to the reclamation of flood lands in the South, but districts were organized under the state laws of the various states. Incidentally, Mr. Morgan wrote the Arkansas laws. The districts were organized and carried out their own work by hiring the engineers for such help as they needed to do the job. It was a private enterprise under public districts. We later got into building roads under the same general principle. But for the most part our work was large scale reclamation of wet lands in the South.

DR. CRAWFORD: Did you do drainage work in the levee building?

MR. FRY: Yes, the word drainage, let me say, is all right if you understand that it means large-scale drainage. We didn't do small-scale drainage because it wasn't as profitable as large-scale, and there was so much of the other to do that we wanted to help get the whole picture done. We operated very little in West Tennessee because, as you probably know, the lands over there are not nearly as rich as they are in the Valley.

MR. FRY: (Cont'd.)

Then our work spread into Texas and the other Southern states in general. Under this system bonds were sold by the drainage district and were purchased by security houses in St. Louis, Chicago, and other places. What I am talking about now are plans that were not made by us, but by other engineers. A part of our business was to examine the plans and other things about these other districts and make a report to the bond houses as to the validity of the plans and the security of the district. We determined whether or not the plan would work and whether the works that were proposed could be constructed for the amount of the bond issue,and would the benefits exceed the cost. I did a great deal of work in that field.

DR. CRAWFORD:

Did you do field work, or did you work mainly in the office?

MR. FRY:

Well, in that kind of work I went out in the field and examined the areas that were involved and then came back and made my report to my superior. Then we got out official reports to the bond houses. Most of my work was in the office on design and planning, but I did do some field work, naturally.

MR. FRY: (Cont'd.) As I said, we did some work in highways and streets, and I was resident engineer on a highway job at Newport, Arkansas. Do you know where that is?

DR. CRAWFORD: Yes, sir.

MR. FRY: But generally my work was spent in the main office. Then, after that Dayton flood, Mr. Morgan went to Dayton while the Morgan Engineering Company was the first chief engineer on that job he spent most of his time there. We carried on the, the same type of work very successfully in Memphis until the Depression in 1931, I guess it was.

DR. CRAWFORD: Who managed the business in Mr. Morgan's absence?

MR. FRY: Well, Mr. Hiedinger was the vice president, and he and Mr. Morgan had been associated in the government under the old Department of Agriculture. I think they called it the Farmers' Grange Investigation. They were there together, and they decided that there was a good opportunity in Memphis to set a private engineering organization. And that was what they did. When Mr. Morgan went to Dayton, to look after the Miami Project, we did some work in Memphis on

MR. FRY: (Cont'd.) that project and Mr. Hiedinger spent some time up there, but that, essentially, was Morgan's job. Mr. Carl Bach, who was also a member of the Memphis company went up there with Mr. Morgan.

Then there came a time when Mr. Morgan personally became chief engineer on the Miami Conservatory Project. The Morgan Engineering Company located at Memphis then had nothing further to do with the Dayton job. After the. . . I think that even before the Miami job was finished, Mr. Morgan and Carl Bach and one or two others from that job, set up a company in Dayton, Ohio called the Dayton Morgan Engineering Company. They handled some work, but they were never what I would call successful. Not nearly as successful as the Memphis Company. The Memphis company continued then until 1931. Mr. Ned Sayford, who later came over to TVA and who is deceased had come into the Morgan Engineering Company at Memphis, and he was a vice president there, and Mr. Hiedinger was President then.

DR. CRAWFORD: Why did you go to work for the Corps of Engineers? Was it the declining business caused by the Depression?

MR. FRY: Yes, that is right. I was in Texas at the time. We were working in the Rio Grande Valley, and the project there came to a standstill because we ran out of funds, and the work of the type that we were doing had to shut down. There wasn't anything to do. Having a wife and family, we had to eat; so I went to work for the Corps of Engineers.

DR. CRAWFORD: What did you do for the Corps, and how did you like working for them?

MR. FRY: I went to work for the Corps shortly after the West Memphis headquarters had been built under the direction of then Major Dan Cohn. Have you perhaps heard of him?

DR. CRAWFORD: No, sir. I believe not.

MR. FRY: Well,you know how the system works, I guess. He was the district engineer at that time, and I went to the Memphis office and laid my qualifications out before him, and I had no problem in getting a job. The only problem was that I had no Civil Service standing. So I was carried temporarily until they finally gave a civil service examination

MR. FRY: (Cont'd.) for inspector, which at that time I was qualified to do a much higher grade of work, but in order to get into civil service that was the test that was used at that time for a lot of better qualified men to get into Civil Service.

DR. CRAWFORD: Did you continue to live in Memphis during your service with the Corps of Engineers?

MR. FRY: Yes, I did. I worked for them for two years. One year I spent in Memphis and I was working in checking plans and designing concrete dams, levees, and things of that sort. Then in October of 1932, I went to Cairo, Illinois and assisted the area engineers of the office there, which was building the flood control works that came after the great 1927 flood, which you don't remember.

DR. CRAWFORD: Was that the one the Corps of Engineers said couldn't happen?

MR. FRY: Yes, oh yes. Right up until that time the Corps of Engineers had said, "You're all right. Everything's fine there." But as I say, I was working with the district engineer. He later became

MR. FRY: (Cont'd.) a general, and he planned the Pentagon in Washington. He was a very capable engineer and a very fine engineer. I enjoyed working with him very, very much. Then I spent a year in Cairo engaged on the flood control works and levee work and the work of the river banks and the building of pile dikes. Do you know what pile dikes are? It's a dike built of piles driven into the bed of the stream, extending out into the stream and so built that it diverts the current. Usually sediment forms behind the dike and that keeps the bank, then, from receeding. That was the type of work that I did there, and that was under the man who is now deceased, Mr. Theodore C. Nappen.

DR. CRAWFORD: Were you still employed by the Corps when you were in Cairo?

MR. FRY: Yes, the district had three offices: one in Cairo, one in Memphis, and one in Helena. I was fortunate enough to be sent to the Cairo office.

Mr. Nappen, incidentally, the area engineer. . . I had written a number of articles for the Engineering News Record. You perhaps are familiar with that?

MR. FRY: (Cont'd.) I have done technical writing all my life.

DR. CRAWFORD: Do you think there has been an advantage having your experience or your training in journalism in that profession?

MR. FRY: Oh, very much. Engineers are not supposed to like to write, but I do. I still do. We have a little magazine that we get out of here, and I am still chairman of the board of it, so we're doing all right. But, as I said, I worked for Mr. Nappen. He was the area engineer and I was the assistnat engineer, and I worked there until the TVA was formed and Mr. Morgan was here and Mr. Bach. They were putting together an organization and they called me up and wanted to know if I would come over here.

DR. CRAWFORD: Now, when did you get this call, Mr. Fry?

MR. FRY: That must have been in September sometime in 1933.

DR. CRAWFORD: What had you heard of TVA before that time?

MR. FRY: (Cont'd.) Before that time I had, of course, read about TVA in the newspapers and in the engineering journals, but I had no real knowledge of it. I knew that Mr. Morgan was there and Mr. Bach and Mr. Sayford came over here from the Memphis office. The Morgan Engineering Company practically closed down at the time. They did sort of carry on until Mr. Hiedinger's death a few years later. Then they closed up.

DR. CRAWFORD: Was that during the 1930's?

MR. FRY: When they closed? I couldn't give you the exact date on that; it depended on Mr. Hiedinger's death. They carried on a little maintenance work for a very small practice, and he carried on more as a consulting engineer. But that work never came back because the government then took over that type of work so that the carrying on of a large scale reclamation by districts ceased to be in the South. The companies that were engaged in that just went out of business. There wasn't anything there for them.

You asked me if I lived here while with the Corps in Memphis. I did for more than a year

MR. FRY: (Cont'd.) after I went to Cairo, Illinois, I still lived in Memphis. But I came to Memphis to represent the Cairo area office frequently and saw my family. Then we finally moved to Cairo.

Then, when I came to TVA, the first job I had with TVA I went to Denver, Colorado to work on a report on the design of the Norris Dam. My family stayed in Memphis until I came back to Knoxville. Then they came over here in December. I came back from Denver about that time, and they came to Knoxville in December, 1933.

DR. CRAWFORD: Now, when was it you arrived in Knoxville?

MR. FRY: The first part of early October, 1933.

DR. CRAWFORD: What conditions did you find in TVA at the time and what was your position?

MR. FRY: Well, my position then, when I first came here, was as assistant to the Assistant Chief Engineer. A new organization was being formed and there was a lot of confusion, as would be expected. The organization had not settled down or gotten into

MR. FRY: (Cont'd.) any set pattern at that time. So that while I was in Denver most of October and November, as I say, I was a staff assistnat working there on the Norris Dam report. That came about in a rather durious way. Well, let me tell you this, the Bureau of Reclamation engineers Mr. Morgan had confidence in. The then Chief Engineer of the Bureau was John L. Savage, who was a very fine engineer. And Mr. Morgan had confidence in him. He did not have confidence in the plans that the Corps of Engineers had made. Construction had been started by the Corps before TVA was initiated. They had some work under way in the river, and of course, when the Act was passed, all of their work ceased and they moved out. Then TVA moved in. But Mr. Morgan did not accept the plans that they had made. He had the Bureau of Reclamation review them, you might say, and re-plan the job. At the time there were three of us who were out there from Memphis. Professor Sherman Woodward had been a long-time associate of Dr. Morgan's. He was formerly of the University of Iowa in the hydraulics department, but he had also been on the Miami Conservancy District for Dr. Morgan. He is deceased. But he was a very fine engineer. Roland

MR. FRY: (Cont'd.) Kamprmeier (you probably have him on your list).

DR. CRAWFORD: Yes, sir, I believe I do.

MR. FRY: Well, he was there. Our job was to keep in touch with the Bureau and to keep them moving along and get the report out on Norris Dam as quickly as possible. But unfortunately, before I went out there, a number of the Bureau engineers had come to Knoxville, and they made a field trip with the TVA engineers—Dr. Morgan and so forth—and Dr. Morgan got in an argument with one of their engineers by the name of Debler. Dr. Morgan then laid down an edict that Debler was the man who had to write this report. So, Dr. Morgan laid down an edict that Debler wasn't to have anything to do with the report. He didn't want to see him any more, and he wasn't to come here any more. So he sent the three of us out there to get this report out of the Bureau of Reclamation. Well, I've always more or less gotten along with people and have gotten them to do things. Mr. Woodward, a fine engineer, he and Debler got crossed up. Kamprmeier was just out of the University of Iowa, and I, of course, was a little more mature. But it really fell on my shoulders

MR. FRY: (Cont'd.) to get them to write the report, which they finally did. He and I were good friends.

DR. CRAWFORD: What was the substance of the report?

MR. FRY: It was simply a report on the whole Norris Dam project. There are copies of it in the TVA library, if you ever want to look at them. But that was the report. He gave me credit in the report, but he didn't even mention Mr. Woodward's work of his name. He had his peculiarities.

DR. CRAWFORD: When you returned from Denver, what was your work?

MR. FRY: Well, we were under the head of the then what was called the General Engineering and Geology Division, and I was the head of that. Later that broke down then, and the geology split off. It was General Engineering for a while, and of course, as the organization expanded I became the head then of Hydraulic Data Division. It was known as a division in those days. Later the General Engineering and Geology. I guess that was a department orginally, anyway, we had departments. But that conflicted with

MR. FRY: (Cont'd.) the terminology in Washington, so we did away with the term division. No, we did not do away with the term division, but we stepped up the departments into being called divisions, and the divisions became branches. So that's the way the Hydraulic Engineering Division became the Hydraulic Engineering Branch.

DR. CRAWFORD: What was your work in connection with the building of Norris Dam?

MR. FRY: The hydraulic laboratory experiments for Norris were made at Fort Collins, Colorado. No, they were made by the Bureau of Reclamation at Denver under Mr. W. A. Lane, who is deceased. Then I had the job of Norris of having under my supervision the forecasting of floods in connection with construction work; to set up an organization that could forecast floods and enable the work to be carried on without flooding the work that was being done. I did that, and also at that time there was a great cry that all of our reservoirs here would fill up with sediment. Dr. Morgan gave me the job then of setting up an organization and looking into the problem of sedimentation of the reservoirs. So we then set up a field course that covered the

MR. FRY: (Cont'd.) whole area. We had about a dozen offices scattered all over the Valley. The job of the engineers now was to get sediment samples and to analyze them. We set up a laboratory at Norris and analyzed our own samples and from that made our computations on how the reservoirs—not only Norris—but how long they would take to fill. We found that that would be many thousand years in most cases. So we weren't very worried about Norris or any of the other reservoirs. But that was a real problem from the beginning.

There were only a few rainfall stations in the Valley at the time. We had to set up our own network of rainfall stations in order to carry out our forecasts. Then we would get reports. A part of our field office job was to get local people to report a daily record as to how much rain had fallen in their locality. We also had some gauges that recorded on automatically, and we got those reports, too.

Then, at that same time we were working on what was called the Unified Plan for the whole area, which Congress had called for. I helped to

MR. FRY: (Cont'd.) wite that report, and that covered, as I say, the entire Valley and the projects that TVA could see at that time that looked like they would be good projects to build. We put that into the Unified Plan. Of course, available for that information, was a lot of the data that the Corps of Engineers had collected during the years—over the years. The Corps helped to put out a report. I have forgotten the number of that document, but anyway, it showed the plan for the Valley, but TVA did not adopt that plan. They made their own.

DR. CRAWFORD: Did TVA trust the data collected by the Corps of Engineers?

MR. FRY: TVA trusted the data that had been collected. Yes, I would say so, but not always the adequacy of it. The Corps only had what you actually might say were the preliminary plans based on, really, not enough data to plan the actual building of a dam of this type. Also, on one particular site Dr. Morgan disagreed violently with the Corps on, the one lowest down on the Tennessee River, was the one that the Corps called the Aurora Site. They had located that quite a bit further up-stream

MR. FRY: (Cont'd.) than the Kentucky Dam. Dr. Morgan thought that was not the place to build it, and it was not of a high enough elevation. He wanted an investigation carried on closer to the Ohio River, but not on the Tennessee. That was done under his direction, and certainly the location of the Kentucky Dam, I think, has proved itself over the years to be correct as he carried it out. That was certainly up to Dr. Morgan.

DR. CRAWFORD: Did you experience any special engineering problems in constructing the TVA dams?

MR. FRY: Well, yes,there were always problems. As soon as Norris was built Wheeler lock was udner way, and TVA then took over completed the Wheeler. The Bureau of Reclamation men carried out the plans for Wheeler, then. But it proved not to be feasible to be going back and forth and communicating with them. So TVA expanded its organization—design organization—and one of the two men that I remember (orginally there were two men in the design department) was Montrego, who died recently, and the other was Don Mattern. I don't know whether you have him on your list or not. He is still Head

MR. FRY: (Cont'd.) of the Project Planning division of TVA, but he was one of the two men that were originally in the design department.

Well, since we were cutting loose from the Bureau then, one thing that we needed in TVA was a hydraulic laboratory. I was given the job of setting up the hydraulic laboratory. We set that up at Norris. We took over a building that had been used as a ship in the construction of Norris, and built our hydraulic laboratory in that particular building and some others that were later added. You asked me about problems that we encountered. It's impossible to determine exactly what the foundation conditions are until you get the excavation carried on and you see what they are. And then they don't always look like the borings that were made ahead of time.

DR. CRAWFORD: Did you take boring or core samples?

MR. FRY: Oh, yes. That was a very important part of the work. But, I tell you, you couldn't take enough borings. You couldn't afford to, to completely deliniate the foundation that you would uncover.

MR. FRY: (Cont'd.) At Douglas Dam, for instance, the findings were completely different, and we had to carry on our hydraulic laboratory investigations around the clock to check the design. I don't know how familiar you are with the hydraulic laboratory, but one of the principle principles of it is the design of the spillway which must be of some design in which you can get away from erosion at the foot of the spillway with large amounts of water coming over it. As I say, on Douglas, we had to change very quickly.

DR. CRAWFORD: Were you satisfied with the experimentation you could do there?

MR. FRY: Yes, very much.

DR. CRAWFORD: To what extent was the planning for the TVA dams completed when you arrived?

MR. FRY: Oh, none at all. As I said, the Bureau designed and carried out the design for Norris and Wheeler. We picked up then with Pickwick. But that was after I came here. Pickwich was our first design job.

DR. CRAWFORD: Did you have any concept then of the extent of TVA? Did you know how large an area, how many dams?

MR. FRY: Yes. We had a concept that was set out in this Unified Plan that I mentioned before. That covered all the watershed in the Valley, and at that time with the picture of what we considered building it covered the entire river. Now, since that time, of course, and with additional information and changes in conditions, there have been additional dams addes. But that gave a good concept of what the job was all about. Anybody carrying out a research project in the TVA would want to get a copy of that and read it.

DR. CRAWFORD: Did you anticipate the increased need for power that would exhaust the hydro-electric facilities of the Valley? Did you foresee any need for steam plants?

MR. FRY: Now, are you asking me that personally, or what?

DR. CRAWFORD: Yes, sir.

MR. FRY: My answer to that would be no. At that time, well, we had no conception, and I would say that no one had any conception of the need for the tremendous steam plants that we have now. Of course, that not only applied to TVA, but it applied generally. There may have been some few people who had ideas of the big plants that are now being built. They were few and far between, if any.

DR. CRAWFORD: When did the change come? When did the hydroelectric supply become inadequate? Was it World War II?

MR. FRY: It was shortly after World War II, as I recall. Our first plant was the Watts Bar Steam Plant, which was a relatively small plant compared to what we have now. But it was the first plant. I don't recall the exact date of that.

DR. CRAWFORD: Did you do most of your work in Knoxville for TVA, or did you travel a great deal?

MR. FRY: Well, I traveled quite a bit. I traveled in the Valley itself, and I spent a little time in

MR. FRY: (Cont'd.) Washington. I was a member of a committee that met in Washington that had to do with the TVA problems—The problems which we were concerned with; hydraulics, sedimentation, and other reasons for going to Washington for TVA business. I traveled the Valley quite a bit, too.

DR. CRAWFORD: Have you seen much change in theory in hydraulic engineering? I believe the Corps of Engineers didn't support the idea of building dams for a while, did they?

MR. FRY: The Corps in the beginning did not, and when I say in the beginning, let's go back to about the early 1860's. There was a report by Humphreys and Abbott. Have you heard anything of that report?

DR. CRAWFORD: No, sir, I think not.

MR. FRY: Well, it's a historic report, a big folio, and was about the specifics in hydraulics in the Mississippi River, by Humphreys and Abbott. That report became almost a bible for the Corps for many, many years. As a matter of fact, some of the ideas are still in existence. General Humphreys

MR. FRY: (Cont'd.) was the first Chief of Engineers. He became a General in the Civil War. He was a lieutenant, I believe, at the time he wrote that report. But the Corps did not believe in the theory of reservoirs for flood control, and that's carried right on down until the 1927 flood.

DR. CRAWFORD: It was Herbert Hoover, the President, who changed that?

MR. FRY: Herbert Hoover was the man who was truthfully responsible for that. The Chief of Engineers up until that time, and I think now, too, is appointed by the President on recommendations that come up to him from the Corps. Herbert Hoover turned down eight different recommendations, as I recall it. But anyway, he just kept turning them down until they sent up the name of the man that he wanted to be Chief of Engineers. And that was General Lionel Brown, who happened to be a Tennessean. General Lionel Brown then, he, well, first of all, the Corps at that time had been practicing with the building of a hydraulic laboratory for the Corps.

A noted American engineer, John R. Freeman,

MR. FRY: (Cont'd.) had been fighting hard for it for years, but the Corps. . . They're good lobbyists, as you know, probably. They were able to defeat the bill, but when General Brown got in he changed all of that. He had appointed General Ferguson as head of the Mississippi River Commission, and they built then, the first laboratory at Vicksburg. The built a hydraulic laboratory, which today is an advanced as any in the world. It's the best laboratory of that kind. They did a lot of things besides hydraulics, but it's really a fine institution. The first Director of that laboratory was then Lieutenant Herbert Vogel, who later became Chairman of TVA.

DR. CRAWFORD: Yes, sir. I am to interview General Vogel at the end of this month.

MR. FRY: Well, General Vogel had been to Germany on a Freidman scholarship, and he came back with the ideas that hydraulic laboratories were an essential part of the planning of a water project and that the ideas that the Corps had had previously were not good. I think he was the first Director, and General Brown was the chief engineer. General Vogel really did a good job.

DR. CRAWFORD: Well, sir, from the viewpoint of your engineering work for TVA, do you believe it was important that TVA had one of its original three directors as an engineer?

MR. FRY: Yes, I think it was. Dr. Morgan is a very unusual individual. You've met him, and you know.

DR. CRAWFORD: Yes.

MR. FRY: And he has a very high reputation in most circles. He has a very fine imagination with creative ability, that I think put something into TVA that still is there. A man of other characteristics or lesser abilities could not have done that.

DR. CRAWFORD: Did it help in your engineering work for the planning for the Valley to have a person who understood hydraulic engineering?

MR. FRY: Yes, I think it did.

DR. CRAWFORD: Did the hydraulic engineering change after his dismissal from TVA?

MR. FRY: No, I don't think it did. After he left, Mr. Bass stayed as Chief Engineer for a while, and then he left pretty shortly. Colonel Parker became Chief Engineer. But there was always recognition by that time, well established with the board that they needed top-notch engineering.

Of course, the original TVA engineering organization was a very unusual one, because it was the time of the depression and so many of us were looking around for any place that we could find so that we could eat and keep our families alive. So it was possible to put together as fine an organization as has ever been put together. Men who had had wide experience outside of TVA. That is one of the problems of TVA now, is that the men it has have grown up in TVA and have not have the difference experiences outside of TVA that the original organization had.

DR. CRAWFORD: Were you satisfied then with the personnel you were able to get?

MR. FRY: Oh, yes, we could get wonderful personnel then. And I might say this. Are you familiar at

MR. FRY: (Cont'd.) all with Tau Omega Pi?

DR. CRAWFORD: Yes, sir.

MR. FRY: I don't think you have a chapter at Memphis State, do you?

DR. CRAWFORD: I believe not.

MR. FRY: You don't have an engineering school, do you?

DR. CRAWFORD: Yes, sir, we do, but it's new.

MR. FRY: Is it?

DR. CRAWFORD: It was only established a few years ago. Harry Wiersema is familiar with the man who helped the extablishment—Dean Kellogg.

MR. FRY: Oh, yes. Well, we had at the time the TVA was created the national secretary was at the University of Tennessee, Archie Matthews. We were able to get applications both with his help and without, of Tau Beta Pi men from all over the world.

MR. FRY: (Cont'd.) Of course, I'm Tau Beta Pi, myself. But we were able to get anybody we wanted at that time.

DR. CRAWFORD: Throughout your career with TVA, did you maintain your contract with the engineering profession in general?

MR. FRY: Yes, I did. Yes, and I became an honorary member of the national Society of Civil Engineers.

DR. CRAWFORD: Did you have much interchange of members with other types of employment. Did many of your engineers leave? Did you hire new ones?

MR. FRY: Our turn over was low, and naturally some of our engineers did not stay with TVA. But by and large, most of them did. But, you see, the work of the TVA expanded, too, so we needed more engineers and we carried on a vigorous recruiting unit. We campaigned all the time to get good engineers, and our requirements were always high as long as I was with TVA, until the middle of 1961.

DR. CRAWFORD: How have the engineering requirements of TVA

DR. CRAWFORD: (Cont'd.) changed between 1933 and 1961?

MR. FRY: Well, the engineering requirements have changed largely because of these hugh thermal steam plants that we have now. In the other branches of engineering they have been influenced by that to some extent, but largely the change is not greatly different. The magnitude of it is still there, but the things that has had the biggest influence is the big therman steam plants—both fuel and nuclear. One other development that has been important is the one that Mr. Kilbourne headed up, the tributary area development. That was going before I left TVA, but was just really getting started. Some of my engineering went into that. But I regard that as a very important part of TVA.

DR. CRAWFORD: Were you anticipating the development of nuclear power as a source of electricity when you left office?

MR. FRY: Yes, yes, I was.

DR. CRAWFORD: Did you position in TVA change in any way after Mr. Morgan left?

MR. FRY: No, no, I had no problem, and I don't know of anyone else who did. Dr. Morgan's disagreement with President Roosevelt was pretty much a two-man matter, of course, bringing Mr. Lilienthal in as the third man, and Harcourt Morgan perhaps. But it did not affect the organization. The organization was pretty well set then. It's changed through the years, but not fundamentally.

DR. CRAWFORD: Do you feel that the congressional investigation following his leaving TVA had an effect on it?

MR. FRY: On TVA?

DR. CRAWFORD: Yes.

MR. FRY: I would say that it had no lasting affect. Any affect that it had was very temporary. The biggest change that has occurred in the general thinking about TVA over the country, I think, was when Congress passed the law giving the TVA the right to sell bonds for power development. Nobody bothered about TVA's budget anymore. They don't have to go up there and scrap for every cent. But it used to be that you did, because the power, you

MR. FRY: (Cont'd.) see, was mixed up in it. Now that's out. Nobody worried about that any more.

DR. CRAWFORD: Did you testify often before Congress?

MR. FRY: No, I didn't.

DR. CRAWFORD: What effect did World War II have on the TVA engineering? Did it effect the personnel?

MR. FRY: Yes, it did. We lost a lot of personnel, and in my particular branch it forced us to employ a good many girls to do engineering work. We selected those girls very carefully,not for looks, but for ability. Then we gave them a thorough training course in hydrology and the things that we wanted them to do. They came through very well. Of course, we picked girls that had good science and math backgrounds, and they could have gone through an engineering course without any difficulty. A number of those girls are still working for TVA.

DR. CRAWFORD: What was the major change in the status of the Authority's engineering after the War? Did it have to do with steam plant building?

MR. FRY: I would say yes, yes. The major change would be in steam plant building and also for some little time after the war, getting into this tributary area development. Up until that time it had not been important at all. The development of the sub-watersheds was something that we just didn't do. That's all. But that came after the war, among other things.

The other thing that had entered the picture has been the matter of flood management, particularly that has come about in the smaller communities of the Valley. TVA helped them with their problems. In setting up and in building their low lands along the streams so that they didn't get flooded all the time, making uses of them that were consistent with the minimum of damage. That's branched out from TVA, incidentally, and it's taken over the whole country now. I would regard that as an important activity because it started here and it has had a good man in head of it, Mr. Goddard, Mr. James E. Goddard, I don't suppose he's on your list, is he?

DR. CRAWFORD: No, sir, he's not yet, anyway.

MR. FRY: Well, he's out in Tucson, Arizona.

DR. CRAWFORD: What was his position at that time?

MR. FRY: Let's see. At the time Jim was one of my men. He was with me down in Dallas, Texas in 1928. And then in the Rio Grande Valley later. But Jim was with me almost from the beginning of TVA until they created the Local Flood Relations Staff, they called it. And he was the head of the Local Flood Relations Staff. That has to do largely with flood management and zoning of flood plan lands. That has been quite successful. TVA has investigated, I suppose, some 150 or so counties.

DR. CRAWFORD: Do you feel that this is a logical extension of TVA's original purpose?

MR.FRY: Yes, surely I do, because it helped to develop the Valley and the resources of the Valley. And then if you can extend that out of the Valley, we've done the country a great favor—service. I feel that we did that throughout. I feel that in my own work for TVA. We were looked at by other government organizations like the Corps and the

MR. FRY: (Cont'd.) Department of Agriculture and various other organizations. We always managed to stand up, but it took some doing to get acquainted with the people in some of those organizations. I thought that we could all work together here. They had a lot of eye-to-eye ideas and, of course, our men did too. But TVA has had a lot of ideas in all fields, not only engineering, but going into these other organizations has been good for the country as a whole.

DR. CRAWFORD: Do you think TVA has been more innovative than the usual government agencies? Do you think more new ideas have come out of TVA?

MR. FRY: Yes, I do. I certainly do.

DR. CRAWFORD: Why do you believe that happened?

MR. FRY: I think it happened because of the men and the personnel that TVA has had, starting with Dr. Arthur Morgan. He was very much in the category you are talking about.

DR. CRAWFORD: What do you think were his most valuable ideas—

DR. CRAWFORD: (Cont'd.) contributions to the area?

MR. FRY: I would say he instilled into the organization a basic integrity that is still here, and an imaginative approach to the problem of developing the resources of the Valley in all its phases. I think that is still operative although he's been gone a good many years.

DR. CRAWFORD: I believe that it still is.

MR. FRY: Yes, it's still there. I'm sure Mr. Wagner would agree with that, and I know that General Vogel would, too.

DR. CRAWFORD: Were your relations with other government agencies always satisfactory?

MR. FRY: They were in general, yes. I had close relationship with the Weather Bureau and the Department of the Interior; the Department of Agriculture. Our relationships were always good. The only exception would be that we did have some problems with the Corps of Engineers in Washington. Our relationships here with the Nashville district

MR. FRY: (Cont'd.) have always been fine. But the Washington relations have not always been. I made a trip that I recall very well to see General Crawford to get his permission for one of their engineers, Mr. Hathaway, to come down to the Valley and testify in the law suit that was going on at the time. I received a very cold reception from the General. He had no use for TVA. Of course, you must remember that this was in the Corps hands in the beginning,and then it was taken away from them. It took a long time, and I don't suppose it's all gone yet.

DR. CRAWFORD: Did you spend much time in Washington?

MR. FRY: Well, a reasonable amount of time, yes. I spent a little time in Washington.

DR. CRAWFORD: Did you work with the people in the Washington office? Marguerite Owen and others?

MR. FRY: I worked with Marguerite some, yes. But, of course, most of the time that I was in Washington I spent my time in the Office of the Interior and with other people like that. But TVA didn't always

MR. FRY: (Cont'd.) agree with the Department of Agriculture on the matter of the conservation we used around the small dams, for instance. They were a Soil Conservation advocate, and TVA has never yet adopted that concept; although they are closer to it than they probably ever have been.

DR. CRAWFORD: Why do you think TVA did not adopt it at first? Why are they closer now?

MR. FRY: Well, I think the tributary area development program made it apparent that there are places where that can be beneficial. The Upper French Broad area is one where I spent a lot of time. Our plan, our TVA plan, was mostly for large dams, and people never accepted those large dams. They covered up some beautiful land. Are you familiar with the country above Nashville?

DR. CRAWFORD: Yes, sir.

MR. FRY: That's beautiful country up there. There is some of the richest land in the world there. Well, the Soil Conservation Service had a plan for a considerable number of small dams there, which

MR. FRY: (Cont'd.) have never been consumated. But since I have left, the Conservation Service and the TVA have been working together on a plan there which I am not too familiar with.

Then there were some people in TVA's Agricultural Division that never had any use for the Soil Conservation Service either, even though their ideas were sometimes pretty good. But I had many good friends in the Soil Conservation Service. I had no personal problems with them.

DR. CRAWFORD: Were you able to work satisfactorily with the people planning the architecture work for TVA?

MR. FRY: The architecture of the dams and that sort of thing? Well, I had no direct contact with that but as you know, TVA has had a chief architect for many years. Harry Tour, you've probably got him on your list. He retired as the Chief Architect. I would say there has been no particular difficulty, other than the usual differences of opinion. Nothing upsetting.

There were some early ideas about Norris Dam,

MR. FRY: (Cont'd.) about making the dam there quite an architectural monument. But those ideas were never carried out. Those architects didn't last too long. One of them had the idea of having a giant like Hercules standing there placing his hands against the dam as if he were holding it up, you know. (laughter) But that didn't last. That sounds crazy, doesn't it? But that actually happened.

DR. CRAWFORD: I haven't talked to any of the architects yet. I want to talk to Harry Tour, and I believe to Roland Wank, also.

MR. FRY: Yes. Well, you'll find them quite different. Harry Tour, of course, retired a few years ago. You know, he's not in the best of health, but he could talk to you. You'd get a lot of good information from him.

DR. CRAWFORD: What changes occurred in the plans in engineering of TVA in the 1950's during the Eisenhower administration?

MR. FRY: That was the administration in which General Vogel was appointed the Chairman of the Board. General Vogel came down to TVA, and he didn't know much about

MR. FRY: (Cont'd.) it, really. But he had ideas that he had gotten from his Corps experience. He started to do certain things that he found really weren't the best things to do. Personally, he wanted to move my hydraulic laboratory to Vicksburg and do all the work down there. We had to work pretty hard to keep that laboratory where it belonged. It was advantageous to have it right here close to the jobs. He hadn't appreciated that when he just came in here cold. That was the chief influence that the Eisenhower administration had on TVA at that time. But let me say in behalf of General Vogel, that he learned rapidly and he saw what the difference was. He came to be what, in my opinion, the best, excluding present people, of course; but I think he was the best Chairman that we ever had. After he had learned the job I had my regards for the General. I think he did a fine job here. He was well-liked by the people of Tennessee, and he carried the message of TVA well around, not only in the Valley, but outside the Valley. I think he did an outstanding job as Chairman.

DR. CRAWFORD: But did he come to believe in the concept of TVA after arriving?

MR. FRY: I would say yes. That, of course, I can't look into his mind and tell you. We had a problem here regarding his reappointment. I don't know whether you are familiar with that or not. The present Chief of Engineers, General Cassidy, before he died General Eisenhower wrote to President Nixon and asked that General Cassidy be appointed. Are you familiar with that?

DR. CRAWFORD: Yes, I remember something about it.

MR. FRY: He appointed him, but of course, after Ike died that still left the decision on Nixon's desk to appoint General Cassidy instead of Ed Wagner. We were afraid that that might happen, and we didn't regard General Cassidy as a man like General Vogel. Didn't any of us want to see him get in there because—he might have been all right; I don't know. But it turned out all right. Ed got the appointment. I think Howard Baker had a lot to do with that.

DR. CRAWFORD: Have you had adequate support from all of the Tennessee congressmen for TVA?

MR. FRY: So far as I know we've had excellent support from the congressmen. Way back Senator McKellar didn't always agree with what we wanted to do, but I think basically he was, well, I know he was, for TVA.

DR. CRAWFORD: Do you think that was more opposition to TVA, or personal disagreement with David Lilienthal?

MR. FRY: It could have been the latter. I don't know.

DR. CRAWFORD: Mr. Fry, what has been the most significant part of your career with TVA, as far as you're concerned?

MR. FRY: The most significant part of TVA as far as I'm concerned?

DR. CRAWFORD: Yes, sir, in which you have taken part.

MR. FRY: I suppose it would be the opportunity to spending the major part of my engineering career on a project that is as fine as TVA. Is that specific enough?

DR. CRAWFORD: That's specific enough. Thank you very much, Mr. Fry.

MR. FRY: You're quite welcome.

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